Traffic separation, safety and ethics.

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1. The problems.

1.1. Where are we with regard to traffic safety improvements?

For more than 25 years intensive efforts have been made to improve traffic safety. Yet, in defiance of extensive research it is not easy to discern the primary causes of these achievements. In fact, we have to consider several important factors, like traffic separation, traffic education programmes, technical improvements of car technology and traffic regulations. However, while each of these factors, separately and in combination, certainly have some positive effect within a relatively short time lapse, they tend, in the long run, to counteract our safety intentions. Furthermore, if we leave our current, most dominant interpretation of traffic safety in favour of a more appropriate, extended notion of traffic safety, even short-term improvements are highly questionable - or so I shall argue. Anyway, we have to deal with the fact that our fight against traffic fatalities and injuries has come to a dead end. It seems to be extremely difficult and costly to reduce our present traffic accident rate significantly. The falling accident rate pr. road-user has obviously levelled out.

In what follows I want to propose a more appropriate notion of traffic safety which takes into account the ethical substance. Thereafter, the role of ethics in traffic safety discussions will be shortly illustrated. On this basis, the significance of traffic separation arrangements will be discussed and I shall argue that traffic separation will not promote but rather tend to prevent long-term improvements in traffic safety.

1.2. An extended notion of traffic safety.

When speaking about traffic safety, we normally think of degrees of "risk taking", exposing oneself to danger when we physically move outside our homes. To neutralize any risk by staying at home or simply refraining from moving is clearly counter-productive. It will endanger our life much more than venturing out on the road. Some degree of mobility is recommendable and even imperativ. To maximize physical mobility, on the other hand, as is currently aimed at politically, economically and socially, may, however, be as fatal as a minimizing strategy. Ethically, at least, this maximizing strategy is highly problematic. Although it may be argued, that any restriction of our physical mobility will be an infringement of our personal freedom, this argument is hardly tenable. A restriction of our freedom to move is not necessarily a restriction of our freedom but rather a reallocation of constraints required by ethics. The total amount of constraints may be stable, although their character change in the light of ethical considerations. (Cf. Zeitler 1995). For the moment I shall not elaborate on this point. What is important is the fact that when we discuss

traffic safety we shall not primarily look for zero-risk solutions but for ethically defendable or ethically right solutions. This means, there may be near-to-zero-solutions which are ethically offendable while certain risky actions are ethically highly recommendable, although there is no general connection between high risk and ethical rightness.

To bring this argument a little further, we need a more fully developed concept of traffic safety which is sensitive of the ethical challenges at stake. From the outset, it is important to notice that the ethical aspects are not brought into the traffic safety debate but are already present, recognized or not, and need only to be illuminated. To some extent, ethics yield the legitimation and rhetoric strength of current traffic safety debate. It is obvious that we currently are not aware of this nor do we realize the whole extent of ethical challenges. That´s why we need some new reflections on the notion of traffic safety.

In its most restricted form, traffic safety is focusing on "safe vehicles", i.e. vehicles which are hardy, unlikely to suffer damages. Although some people care immensively for their cars, it is not the damage of the car which is in question in traffic safety but the possibility of casualties. Yet, the concern for car damages should not be neglected totally, although for other reasons it normally is the case. A car represents a collection of valuable natural resources which, once produced, should be protected at least for ecological reasons. Any damage will cause additional resource depletion which threatens sustainability. Of course, scrapping and recycling of substances may be more ecological than vehicle maintainance, though this is not always the case.

More than resource exploitation, the safety of vehicle passengers has been the main focus of traffic safety activities. The attention to vehicle passenger safety has been greatly promoted by car industry commercials, while the impact on the social and natural environment has been neglected. Yet, this is an illegitimate restriction and distortion of safety issues. It is obvious that the more robust and safe we build our cars to protect the passengers the greater is their theat to pedestrians, bicyclists and animals. Furthermore, higher vehicle safety standards are also bought by greater resource consumption and higher emissions of toxic materials. So, when we deal with car safety issues, the central question has to be: Safety for whom?

True, traffic safety questions are usually not restricted to car technology. Other types of transport technology have to be evaluated on equal terms. And we have to deal with question of traffic management and infrastructure development. This is the right forum to discuss and develop a more comprehensive notion of traffic safety. It is when we move our attention from particular technologies to the interrelationship of activities that the ethical challenges and problems become clear. Before I turn to the central topic in this paper, the practice of traffic separation as an instrument of traffic safety, I shall shortly list a few problems connected with traffic safety arrangements which may highlight the nature of ethical concern.

Motorways have often been launched as considerably safer than ordinary roads, meaning that the rate of injuries affecting passengers in vehicles on motorways is significantly lower than

for other roads (excluding low speed residential roads). Yet, this is only true if we neglect the fact that improved infrastructure (of which motorways are a significant part) induces traffic growth and higher fatality rates, neglect the fact that non-authorized users of motorways (e.g. game, horses, cattle, hedgehogs, cats etc.) are exposed to considerable greater danger than on ordinary roads, neglect the fact that higher speeds are responsible for greater toxic emissions, neglect the fact that motorways occupy far greater areas and natural resources and neglect the fact, that motorways force local people to travel greater distances, detours, because of barrier effects and thereby expose them to greater risks. Furthermore, we are now beginning to realize that motorways have a tremendous barrier effect on the local animal life, flora and fauna. Each of these qualifications express serious ethical and ecological problems. And there are several problems related to the aspect of motorways as instruments of traffic separation. But this will be discussed at greater length below.

Effective speed restrictions are maybe the most important of all regulations in favour of traffic safety. To some degree, they protect all participants in traffic situations by allowing for more reaction time and reducing the damaging force of collisions. Ethically speaking, this is the right way to go. But even this policy creates serious problems similar to the ones we shall discuss below. Operating with only legally enforcable and technically recommended maxima, the road users normally have no incentive to minimize their speed. On the contrary. The tempo limits are exploited consistently and one´s actions are considered right as long as they do not transgress the limits. The policy, furthermore, recommends that we drive as close to the tempo limits as possible in order to maintain a constant flow and avoid hazardous overhauling. Yet, all this reduces our attentiveness and sensibility, our moral responsibility for fellow creatures. In fact, we could argue that if we legally had totally free space for action (no speed limits) this might raise our responsibility because their is not prima facie legitimate behaviour.

What formal traffic regulations might be unable to handle has for many years been left to *traffic education*, most efficiently directed against minor children. Looking only at recent traffic statistics, the last decades traffic education has been rather successful. But at what price? Is it really more safe to travel? The obvious reason why the number of fatal accidents with children has fallen is that they have been frightened to refrain from unaccompanied walking and cycling. They have been told that motorists have absolute priority and that they must abstain from any spontaneous action. Children´s actions today are almost totally regulated in the interest of pure survival.

To conclude, talking of traffic safety, we need to go far beyond traffic statistics and technical innovations in order to avoid serious distortions. I shall define *traffic safety* (in its extended sense) as *the responsible movements of human beings taking into consideration the needs and life conditions of other living phenomena, including animals, plants, ecosystems and landscapes.* This definition implies that we sometimes have to risk something in order to get our lives or that of others to work; but it also implies that we - without any adequate reason and moral

justification - shouldn´t expose other living beings and natural phenomena to risks and danger. To make this moral interpretation of traffic safety more clear a few comments on traffic safety and ethics are appropriate.

2. The place of ethics in traffic safety discussions.

Our notion of ethics has recently undergone important changes. The current ecological crisis is mainly responsible for this shift towards giving non-human nature some form of moral status. However, in traffic safety discussions this extension of moral concern has still no visible impact. Our main concern is still with human health and fatalities. The loss of animals, the deterioration of ecosystems, not even the social costs of transport behaviour have been considered in traffic safety discussions. The primary focus has been on the safety of cars and their impact on passengers. This narrow attitude can hardly be called ethical.

Although the concern for our co-passengers´ safety has to be morally appreciated, the negligence of our fellow creatures outside the car constitutes a serious moral problem. Of course, one might give traffic safety issues a purely technical status. Yet, the main objection to this is that traffic safety issues, though technically well defined, have an application which transcends this narrow interpretation. Our scientific concern for traffic safety is ultimately based on an ethical objective: to prevent morally reprehensible transport behaviour. The answer to the question what is "morally reprehensible behaviour" is dependent on our perception of the world, i.e. our sensibility, our intellectual and emotional openness. To make this sensibility a matter of taste or arbitrariness is, however, to misunderstand the nature of ethics.

The nature of ethics is to impose obligations and responsibilities independently of our arbitrary desires. This imposition is not one of divine character or that of experts but generates from the particular context of action. What ethics demand is revealed to us through our sensibility but is independent of whether we actually sense these demands or not. The fact that we do not feel any guilt or responsibility when killing a hedgehog on the road does not exempt us from moral responsibility. The fact that we don´t think it would be wrong to extinct billions of organisms by asphalting a stretch of road does not constitute a moral excuse. So, we better try to learn to improve our moral sensibility.

In relation to traffic safety this means, an extended notion of traffic safety is unavoidable, unless you close your eyes for the normativity of reality. Following a strong scientific tradition, normative aspects of reality fall outside the scientific enterprise. However, this positivistic stand has been criticized serverely for a long time because of its normative bias and the reductionism preventing the attainment of comprehensive knowledge. The question is not, whether or nor to favour an ethical or normative interpretation, but which normative interpretation is closer to reality. This is a question of "appropriate" descriptions of real world situations.

To talk of safety implies basicly a respect for the development of life, not only one particular or statistical human life, but all forms of life. This universality is widely acknowledged to be at the core of ethics. When the safety of car passengers is threatening the safety of other life forms, this safety is probably paid for too much. The construction of safe cars and safe roads (i.e. roads which promote the safety of the cars and passengers using them) is undermining the safety of other life forms. If we don´t consider this fact, we don´t show concern for traffic safety at all. Different forms of traffic separation are supposed to have an important impact on traffic safety. Whether this is the case, however, has still not be shown. Indeed, I suppose, traffic separation arrangements have serious negative impacts on traffic safety as a moral notion in the sense just explained. This thesis will be discussed now.

3. Traffic separation - status and problems.

No doubt, traffic separation has had a positive impact on the accident and death rate of human beings. The notable decrease of accident and death rates since the early 70s is at least partly due to improvements of the road infrastructure by establishing more lines, cycle paths, motorways, pedestrian zones etc. Defining traffic safety as just a matter of accident, casualty or death rates, the last 25 years efforts must be characterized as a success. There are, however, important national differences which only in part can be explained by traffic separation arrangements, although to some degree the figures for Japan actually reflect a lack of traffic separation.

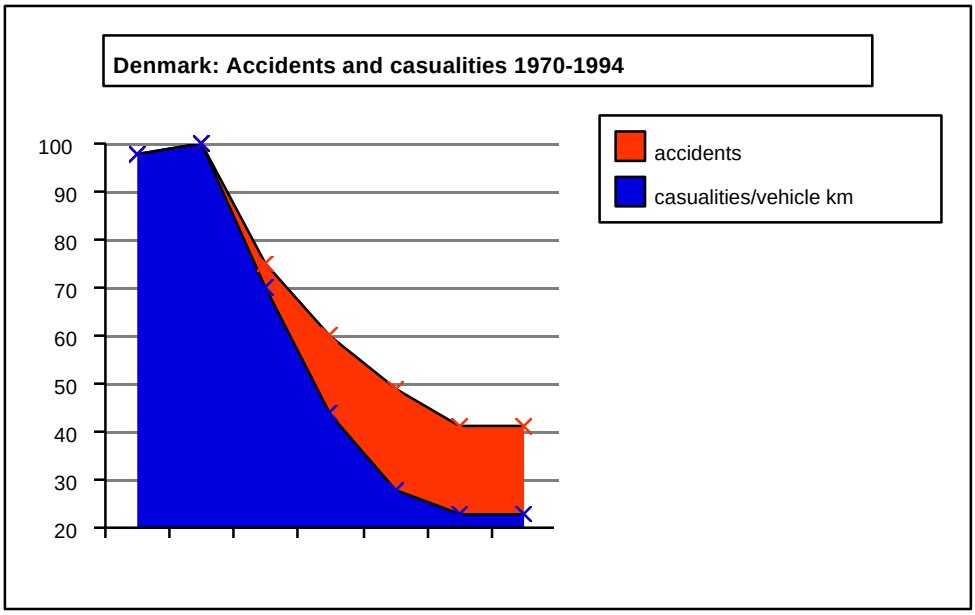

Fig.1: Accidents and casualties/vehicle km in Denmark 1970-1994. (Danmarks Statistik, 1996, Tab.1.1. and Vejdirektoratet, 1996, 39.)

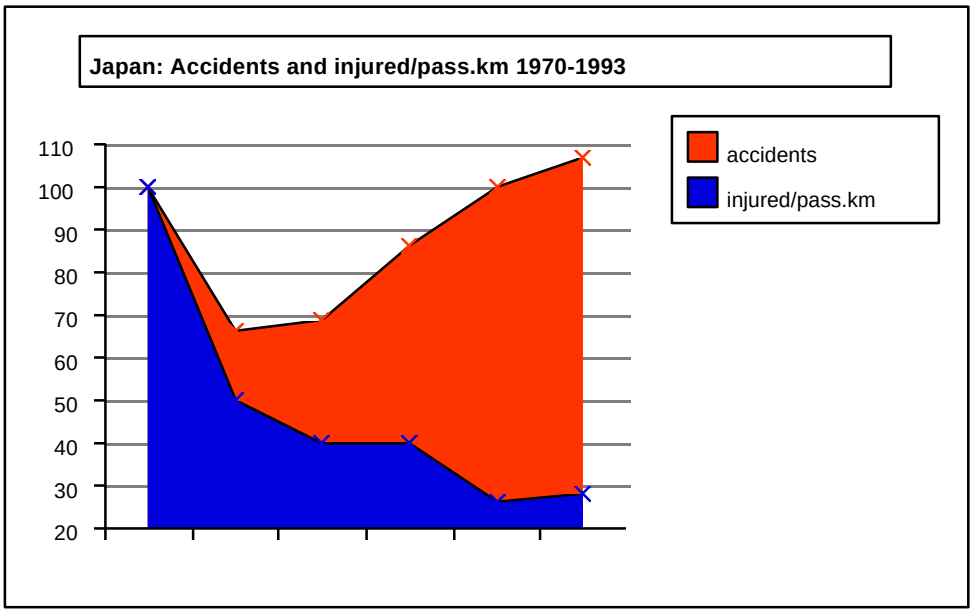

Fig.2: Accidents and injured/passenger km in Japan 1970-1993. (Ministry of Transport, 1995, 66-67, 154-155.)

It is true, from a moral point of view even this progress in the Danish situation is not satisfactory. The only tenable goal may be a zero result. Each particular death caused by our current traffic conditions is one death too much, some will say. Each death or serious casualty is a tragedy. This is also the official motivation for intensifying traffic safety arrangements.

Although this may seem to be a reasonable way to look at traffic safety and ethics it is still a very narrow perspective, neglecting several important aspects of life-fulfillment and ethics. Morally speaking, the casualty or death rate in itself is irrelevant. What is important is how these particular injuries or deaths came about. To avoid serious injuries at all is impossible and not a moral demand at all. What is morally important is our degree of consideration and concern for other living creatures whose fate we only partial have in our power. Having this in mind at least three problems escape our present debate on traffic safety and traffic separation.

(1) One main factor explaining the decrease of accidents and casualties is the growing avoidance of dangerous traffic situations. Traffic separation arrangements are one main instrument for achieving this. Looking at pedestrian accidents in Denmark, only 0,3 per cent occur in relation to motorways. And the reason is obvious: almost no one chooses to walk on motorways which are supposed to be free space for motorists and extremely dangerous for non-motorists. Another way to react to dangerous situations is to join those who have the greatest power to survive. So, threats to non-motorists motivate more and more people to become motorists causing an escalation of motorization and an increase of danger for non-motorists. This tendency has been supported by increasing attention to the security of motorists who happen to be an ever growing population.

Although the death rate of children has declined, the roads are not becoming safer. On the contrary. The primary explanation for the reduced death rate has been the withdrawal of children from the threat rather than the threat from the children. Roughly speaking, safety has been bought by loss of freedom. Actually, there are sporadic attempts to measure both freedom and safety in one and the same investigation in order to get a more realistic picture of the situation although this is very difficult within standard scientific models and theories. (See f.ex. Mayer Hillman et al., 1990,109.)

(2)While making it more safe for ourselves we make it more unsafe for others and become generally more irresponsible. Feeling safer and safer our *attention* towards the world outside, which no longer represents a threat, declines considerably. In traffic separated spaces (motorways, cycle paths, rail road lines etc.) we gradually loose awareness and concern for what happens outside these areas. This is what makes junctions extremely dangerous. Imaging mixed transport modes, like on residential roads, we have to be cautious and attentive and must have constantly the well-being of other raod-users in mind. Getting used to specialized, separated traffic lines this attentiveness rapidly declines and the end of these lines makes the meeting with other transport modes highly dangerous. Almost all accidents occur at raods with several paths, including collisions within the same path or at junctions. These collisions have an obvious explanation. Most importantly, the motion on separate lines invites a false sense of security. On motorways, we don´t expect pedestrians, horses or playing children. Furthermore, we expect a reasonable flow and homogenous driving behaviour. Any transgression of these rules and expectations endangers our mobility and health and catches us by surprise. Actually, our security and safety declines with the growth of traffic separation because we loose our attentiveness and awareness of potential dangers. The more we feel secure the greater the chance for fatal surprises. And this is also true for intelligible vehicle highway programmes. Even if they may prevent some injuries here and now, in the long run they only deepen our powerlessness by suspending our power of subjective judgment.

The very low accident rate at speed restricted areas is astonishing: Only 0,16 per cent of all accidents occur on residential roads having a speed limit of 20 or 30 km/h. Here the reasons are clear: pedestians and cyclists are given priority and there is actually no priviledged free space for motorists. As low as 0.01 per cent of all accidents in Denmark occur on roads with speed calming arrangements, that is about 9 out of 10000 accidents a year. Having a closer look on why these 9 accidents happen at all, 8 out of 9 occur on straight stretches while 1 happens at crossings. There are no accidents at all where the roads does not encourage to speed up, for example where the road has curves. (Danmarks Statistik, 1988ff.)

How can it be that cyclists prefer bicycle paths and pedestrians prefer pavements? Again the reason is some false feeling of security. It may be right that cyclists and pedestrians can relax on these paths as motorists can on motorways. But the gains are small and non-lasting. This we realize when we leave the paths. Junctions get extremely dangerous compared with traffic integrated

arrangements. And more importantly, in the long run we weaken our attentiveness and become unable to communicate and travel with other road users. This is where the ethical aspects become visible. Traffic separated roads degenerate our moral sensibility and concern because we lack the opportunity to adapt ourselves to each other. We forget how to live and move together. We loose our ability for making moral judgments.

The mental and emotional degeneration of car drivers is well-known. Being inside the car the world outside looks strange and irrelevant. The car driver has no chance to judge and act adequately due to the separation and isolation from other moral subjects. The same psychological mechanism is at stake in traffic separation arrangements. The seriousness of these things lies in the long-term effects and elusiveness.

As a consequence of the mentioned mechanisms, traffic separation arrangements have only an impact in the first time after introduction, then their effect is declining and finally, they work contrary to their intentions. This development corresponds to the general development in traffic safety. With the introduction of traffic safety arrangements a statistically significant decrease of traffic accidents and fatalities had occurred. By now, however, we have to face a stagnation and even rise of traffic injuries due to counterproductive forces just described. Graphically, the situation may be illustrated as follows.

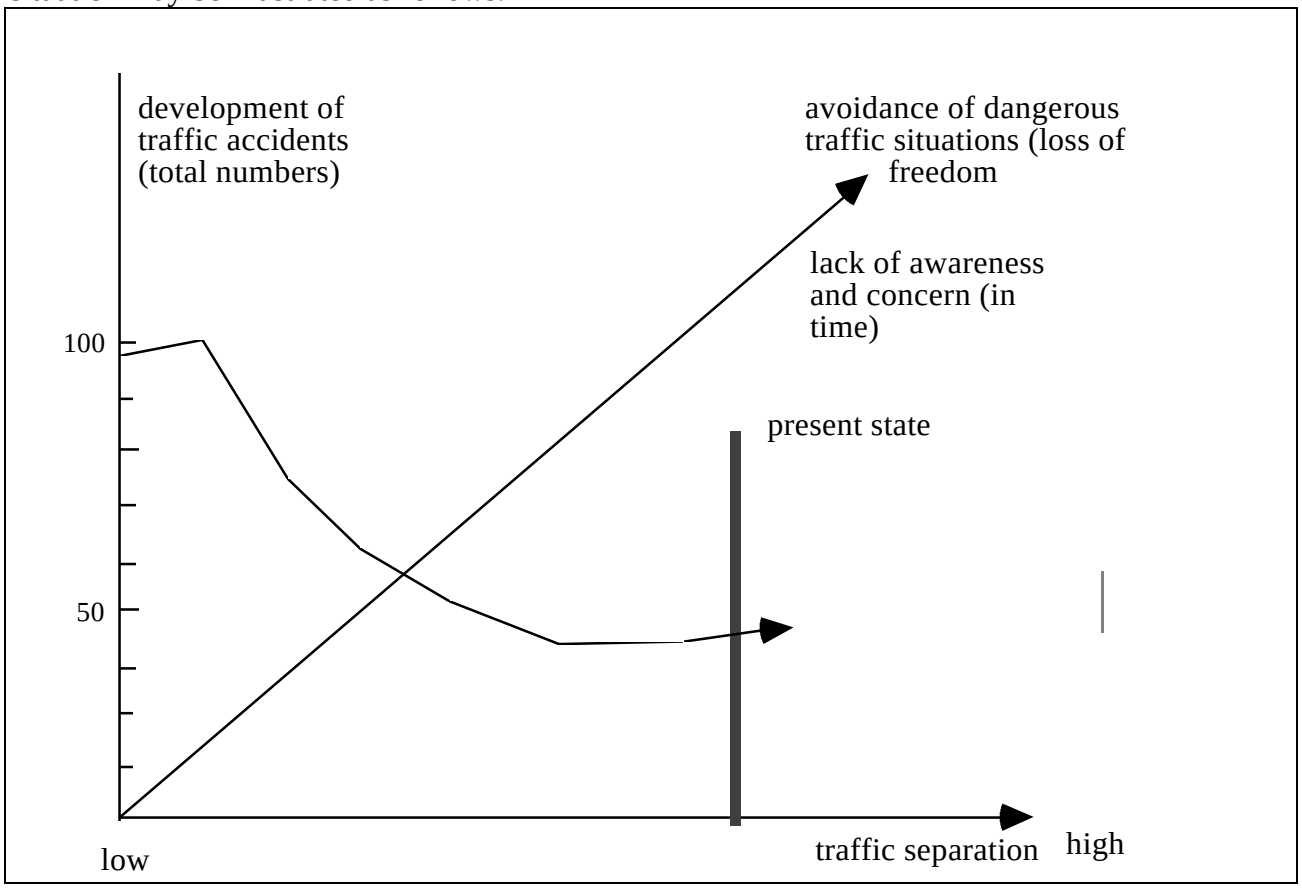

Fig.3: Traffic separation as an instrument for traffic safety and counter-active factors.

Studies in Scandinavia, have shown that traffic safety increases with the number of pedestrians mixing up with the transport on wheels. (Nordic Road & Transport Research 3/93, 17.) Generally, only completely segregated traffic-modes and unfeasible large roads, combined with advanced vehicle-technology and advanced traffic regulation would minimize existing accident rates considerable. However, this vision, although seriously considered by traffic engineers, is socially and environmentally unacceptable.

(3) Focusing on casualties makes us overlook the damages to non-human nature. What is true about our growing carelessness or non-attentiveness to other human road users is particularly true in relation to natural phenomena: animals, plants, ecosystems etc. To mobilize any concern for these creatures an intimacy is necessary which car drivers and car passengers in particular, but also plane train and ferry passengers are largely excluded from.

From the point of view of social and natural interaction the tendency of planning for independent, autonomous individuals which do not need to rely on their environment for free movement is disastrous. The automobile has for a long time been recognized as a refuge for the private self, reducing the environment to nothing but external impediments to free action. To revitalize our social and natural relationships we need to create a traffic environment which makes contact between people and nature possible. Narrow, integrated roads, as found in many residential areas in Tokyo or as recently reconstructed in many towns in the Netherlands and Denmark, are ethically preferable and much safer than traffic separated areas. To mix different modes of transport, recognizing the priority of walking and non-motorized transport modes, re-creates our personal concerns and responsibilities, which is the condition for a better quality of life and quality of nature.

While the automobile is clearly the main technology of social and natural alienation, also public transportation facilities have a significant but less estranging impact. Socially they certainly are important instruments for creating vital social bonds and they are also less disruptive of our natural conditions. On the other hand, however, they are rather insensitive to particular natural circumstances, and this insensitiveness growths with speed. High-speed ferries, high-speed trains and aeroplanes are not only highly insensitive to the environment they pass through but are also much more pollutive than low-speed modes of transportation. From an ethical point of view - or an extended view of traffic safety - therefore, all kinds of high-speed transportations are highly problematic, - mainly because they deprive us our ability to make moral judgements on a reasonable basis.

4. Conclusions.

The exclusive focus on accident statistics and prestigious technical solutions has left ethical investigations largely unnoticed. To change that, new, qualitative methods for research need to be

developed. The significance of traffic separation on traffic safety issues will not be answered thoroughly if we just look at affected changes of accident and casualty rates. For two reasons: The notion of traffic safety falls short of our moral responsibilities, and the institution of traffic separation has serious counterproductive effects on our moral capacity.

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